CLAIMS

1. A method for identifying misalignments in an overlapping region of a stitched circuit in an integrated circuit fabrication process, comprising:

creating a first circuit using a reference mask, wherein first circuit includes a first part of an offset dependent resistor structure in the overlapping region;

creating a second circuit using a secondary mask, wherein the second circuit includes a second part of the offset dependent resistor structure in the overlapping region, wherein the offset dependent resistor structure includes a plurality of nubs that interconnect the first part and the second part of the offset dependent resistor structure;

measuring a resistance across the offset dependent resistor structure; and

determining an amount of misalignment based on the measured resistance.

2. The method of claim 1, wherein:

one of the parts of the offset dependent resistor structure comprises a pair of open rectangular substructures, each having two open terminal points; and

the other part of the offset dependent resistor structure comprises three substructures that interconnect

with the open terminal points of the rectangular substructures to form a single electrical pathway when the first and second parts are superimposed.

3. The method of claim 2, wherein one of the parts of the offset dependent resistor structure structure comprises a pair of test pads.

4. The method of claim 2, wherein the first part and the second part of the offset dependent resistor structure interconnect via four nubs, wherein each nub is oriented in a uniform direction.

5. The method of claim 4, wherein:

a zero misalignment in the uniform direction results in each nub having a first length;

a positive misalignment in the uniform direction results in each nub having a second length that is greater than the first length; and

a negative misalignment in the uniform direction results in each nub having a third length that is less than the first length.

6. The method of claim 5, wherein:

zero misalignment results in a first resistive value along the single electrical pathway;

positive misalignment results in a second resistive value along the single electrical pathway that is greater than the first resistive value; and

negative misalignment results in a third resistive value along the single electrical pathway that is less than the first resistive value.

7. The method of claim 6, wherein the step of determining the amount of misalignment based on the measured resistance includes the step of comparing the measured resistance to a known resistance value representative of the case of zero misalignment.

8. The method of claim 1, wherein:

one of the parts of the offset dependent resistor structure comprises a pair of open E-shaped substructures, each having two open terminal points; and

the other part of the offset dependent resistor structure comprises three substructures that interconnect with the open terminal points of the E-shaped substructures to form a single electrical pathway when the two parts are superimposed.

9. The method of claim 8, wherein one of the parts of the offset dependent resistor structure comprises a pair of test pads.

10. The method of claim 8, wherein the first part and the second part of the offset dependent resistor structure interconnect via four nubs, wherein each nub is oriented in a uniform direction.

11. The method of claim 10, wherein:

a zero misalignment in the uniform direction results in each nub having a first length;

a positive misalignment in the uniform direction results in each nub having a second length that is less than the first length; and

a negative misalignment in the uniform direction results in each nub having a third length that is greater than the first length.

12. The method of claim 11, wherein:

zero misalignment results in a first resistive value along the single electrical pathway;

positive misalignment results in a second resistive value along the single electrical pathway that is less than the first resistive value; and

negative misalignment results in a third resistive value along the single electrical pathway that is greater than the first resistive value.

13. The method of claim 12, wherein the step of determining the amount of misalignment based on the measured resistance includes the step of comparing the measured resistance to a known resistance value determined for the case of zero misalignment.

14. An offset dependent resistor structure for identifying a misalignment in an overlapping region of a stitched portion of an integrated circuit, comprising:

a first part of an offset dependent resistor structure created in the overlapping region using a reference mask;

a second part of the offset dependent resistor structure superimposed on the first part in the overlapping region using a secondary mask; and

a plurality of nubs that interconnect the first part and the second part of the offset dependent resistor structure to form a single electrical pathway, wherein the resistance of the single electrical pathway is dependent upon the length of the nubs that interconnect the first part and the second part of the offset dependent resistor structure.

15. The offset dependent resistor structure of claim 14, further comprising a pair of test pads at ends of the single electrical pathway.

16. The offset dependent resistor structure of claim 14, wherein:

the first part of the offset dependent resistor structure comprises a pair of open rectangular substructures, each having two open terminal points; and

the second part of the offset dependent resistor structure comprises three substructures that interconnect with the open terminal points of the open rectangular substructures to form the single electrical pathway.

17. The offset dependent resistor structure of claim 14, wherein:

the first part of the offset dependent resistor structure comprises a pair of open E-shaped substructures, each having two open terminal points; and

the second part of the offset dependent resistor structure comprises three substructures that interconnect with the open terminal points of the E-shaped substructures to form a single electrical pathway.

18. The offset dependent resistor structure of claim 14, wherein the first part and the second part of the offset

dependent resistor structure interconnect via four nubs, wherein each nub is oriented in a uniform direction.

19. A system for measuring misalignments in an overlapping region of a stitched portion of an integrated circuit, comprising:

an offset dependent resistor structure, including:

a first part created in the overlapping region using a reference mask,

a second part superimposed on the first part in the overlapping region and created using a secondary mask; and

a plurality of nubs oriented in a first uniform direction that interconnect the first part and the second part to form a single electrical pathway, wherein the resistance of the single electrical pathway is dependent upon the length of the nubs that interconnect the first part and the second part, and

a system for measuring the resistance across the single electrical pathway.

20. The system of claim 19, wherein the system for measuring the resistance comprises a pair of test pads at the ends of the single electrical pathway and a pair of probes.

21. The system of claim 19, further comprising a second offset dependent resistor structure, including:
a first part created in the overlapping region using a reference mask,

a second part created in the overlapping region using a secondary mask, and
a plurality of second nubs oriented in a second uniform direction that interconnect the first part and the second part to form a single electrical pathway, wherein the second uniform direction is perpendicular to the first uniform direction.

22. A method for identifying misalignments in an overlapping region of a stitched circuit in a integrated circuit fabrication process, comprising:

creating a first circuit using a reference mask, wherein first circuit includes in the overlapping region a first part of a first offset dependent resistor structure and a first part of a second offset dependent resistor structure;

creating a second circuit using a secondary mask, wherein the second circuit includes in the overlapping region a second part of the first offset dependent resistor structure and a second part of the second offset dependent resistor structure, wherein the first offset dependent resistor structure includes a plurality of first nubs that interconnect the first part and the second part of the first

offset dependent resistor structure, wherein the second offset dependent resistor structure includes a plurality of second nubs that interconnect the first part and the second part of the second offset dependent resistor structure, and wherein the first and second nubs are oriented in a uniform direction;

measuring a resistance across both the first and second offset dependent resistor structures; and

determining an amount of misalignment based on the measured resistances.

23. The method of claim 22, wherein:

a zero misalignment in the uniform direction results in all of the first nubs and second nubs being substantially equal to a first length; and

a non-zero misalignment in the uniform direction results in the first nubs having a length less than the first length and the second nubs having a length greater than the first length.

24. The method of claim 22, wherein a zero misalignment in the uniform direction results in the first and second offset dependent resistor structures having the same resistive values.

25. The method of claim 22, wherein a non-zero misalignment in the uniform direction results in the second offset

dependent resistor structure having a resistive value that is substantially the negative of the resistive value of the first offset dependent resistor structure.